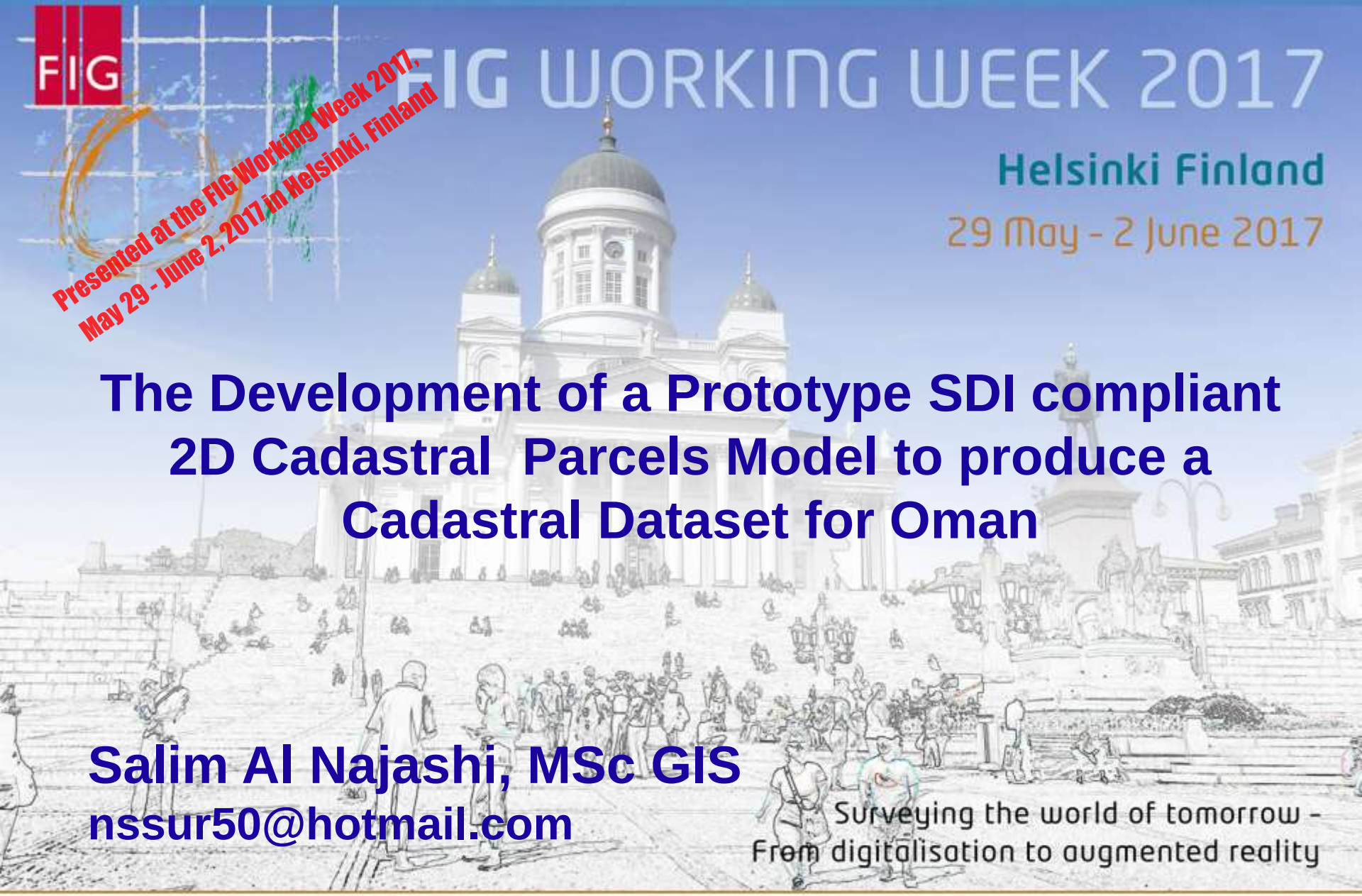


# The Development of a Prototype SDI compliant 2D Cadastral Parcels Model to produce a Cadastral Dataset for Oman

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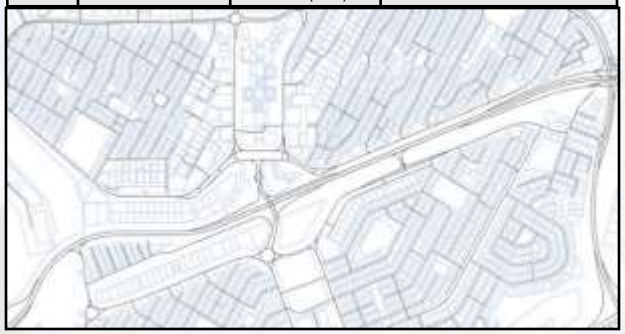
# Introduction

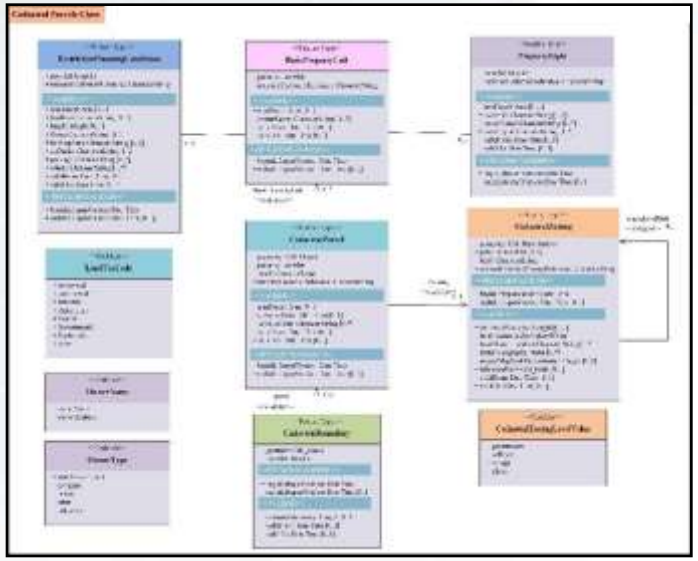
- In April 2015, the National Centre for Statistics & Information (NCSI) appointed as the leading body responsible for the Oman National Spatial Data Infrastructure (ONSDI).
- The development of a 2D cadastral parcels model is essential in order to produce large-scale vector database (GIS applications).

# Aim of the Research

- To develop a 2D cadastral parcels model for Oman which is compliant with SDIs and in line with ISO 19152 LADM.

| ID | Field | Type | Description |
|---|---|---|---|
| 1 | REGN_CODE | varchar (255) | Region Name |
| 2 | WLYA_CODE | varchar (255) | Willayat Name |
| 3 | VILG_CODE | varchar (255) | Village Name |
| 4 | PLAN_NO | varchar 255) | Plan number |
| 5 | PLT1_NO | varchar (255) | Plot number1 |
| 7 | PLT2_NO | varchar (255) | Plot number2 |

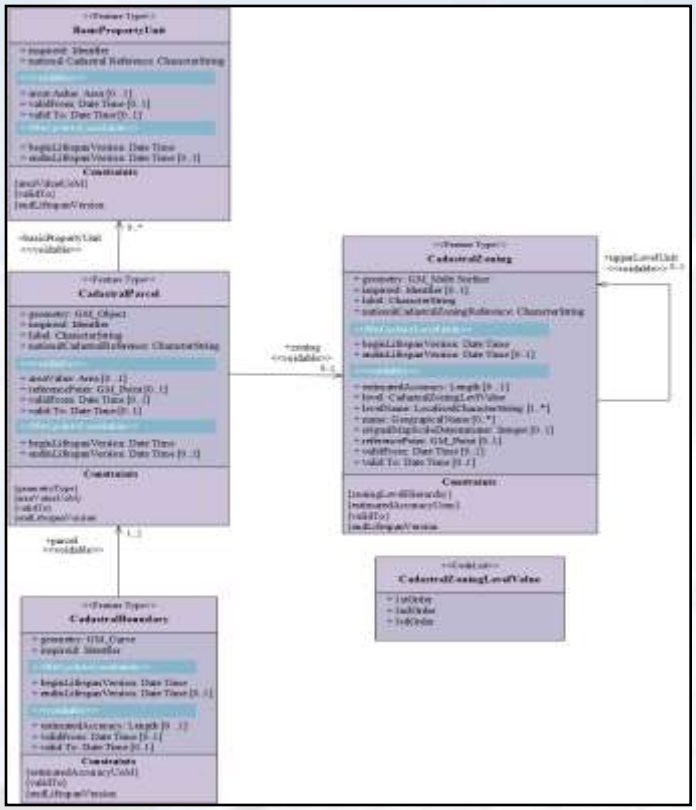




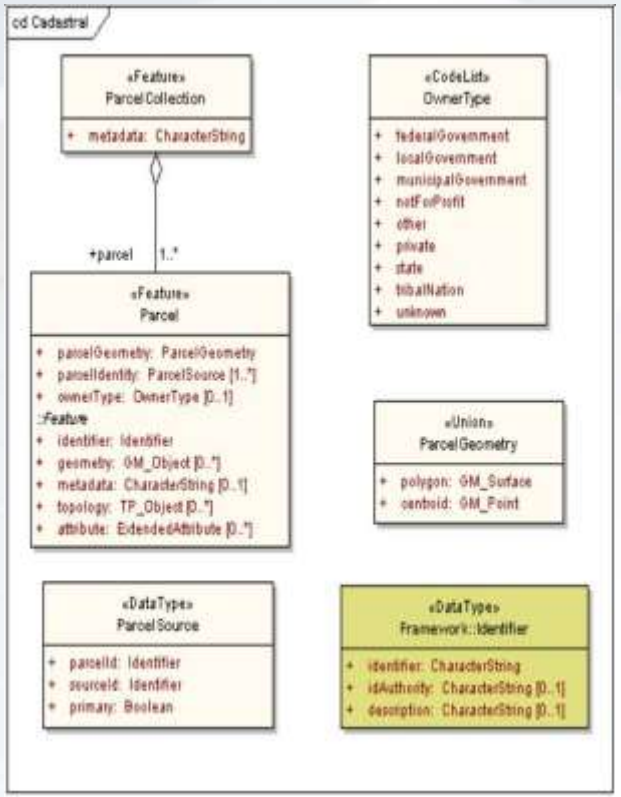
# Methods

- Study of standard practices related to the development of a 2D cadastral parcels data model .
- An examination of the existing situation regarding the cadastral and land registration in Oman .

# Standard Practice



INSPIRE – Cadastral Parcel




FGDC – Cadastral

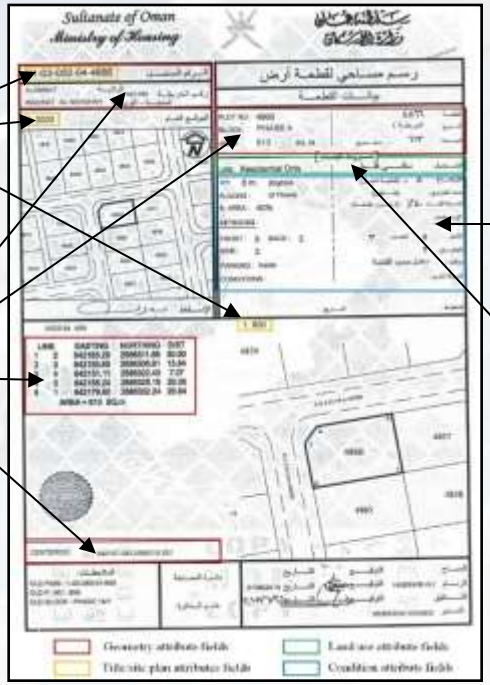
# Cadastral System in Oman

- Ministry of Housing, is responsible for the cadaster maps, land distribution and land registration.
- The land registration uses fixed boundary system, where the precise line of the boundary is determined by land surveys.
- Two separate database are available. Non-spatial Oracle (for land registration) and spatial SQL Server (for cadastral).

- **Cadastral database (surveying) contains four main tables of attributes. It is used to store data related to site plans.**

| ID | Field | Type | Description |
|---|---|---|---|
| 1 | ID | int IDENTITY(11) NOT NULL | Primty Field - Auto-increment |
| 2 | Geo_ID | int | Foreign key - Geometry Table (ID) |
| 3 | LandUse_ID | int | Foreign key - Landuse Table |
| 4 | Condition_ID | int | Foreign key - Condition Table |
| 5 | PAIN | nvarchar(255) | Serial Number of the land |
| 6 | SCALE_IN | nvarchar(255) | The Inner scale of printed krookie |
| 7 | SCALE_OUT | nvarchar(255) | The Out scale of printed krookie |
| 8 | BATH | nvarchar(255) | Folder path where the krookie is stored |

| ID | Field | Type | Description |
|---|---|---|---|
| 1 | ID | int IDENTITY(11) NOT NULL | Primty Field – Auto-increment |
| 2 | Status | nvarchar (255) | Status of the land (Active, Deleted) |
| 3 | PAIN | nvarchar (255) | Serial number of the land |
| 4 | REGION | nvarchar 255) | Arabic Region Name in printed krookie |
| 5 | E_REGION | nvarchar (255) | English Region Name in printed krookie |
| 7 | WILLAYAT | nvarchar (255) | Arabic Willayat Name in printed krookie |
| 6 | E_WILLAYAT | nvarchar (255) | English Willayat Name in printed krookie |
| 7 | VILLAGE | nvarchar (255) | Arabic Village Name in printed krookie |
| 8 | E_VILLAGE | nvarchar (255) | English Village Name in printed krookie |




| ID | Field | Type | Description |
|---|---|---|---|
| 1 | ID | int IDENTITY(11) NOT NULL | Primty Field – Auto-increment |
| 2 | Geo_ID | int | Foreign key – Geometry Table (ID) |
| 3 | Floors | nvarchar(255) | Number of floors |
| 4 | Height | nvarchar(255) | Land permitted height |
| 5 | B_Area | nvarchar(255) | Permitted built area |
| 6 | SB_Front | nvarchar(255) | Set Backs – Front |
| 7 | SB_Back | nvarchar(255) | Set Backs – Back |
| 8 | SB_Side | nvarchar(255) | Set Backs – Sides |

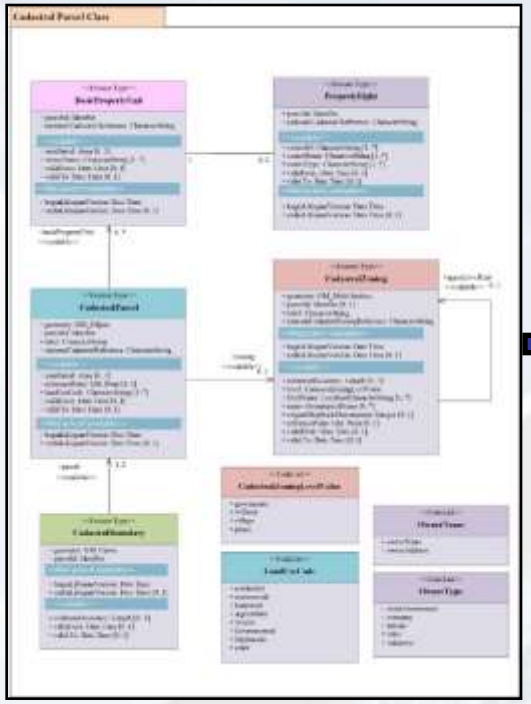
| ID | Field | Type | Description |
|---|---|---|---|
| 1 | ID | Int IDENTITY(11) NOT NULL | Primty Field - Auto-increment |
| 2 | Geo_ID | Int | Foreign key - Geometry Table (ID) |
| 3 | LandUse | nvarchar (255) | Landuse of the plot |
| 4 | Sub_LandUse | nvarchar (255) | Sub-Landuse of the plot |
| 5 | User | nvarchar (255) | UserID updated the data |
| 6 | In_Timer | datetime | Date and time of data insertion |
| 7 | Up_Timer | datetime | Date and time of data update |

# Results & Discussions

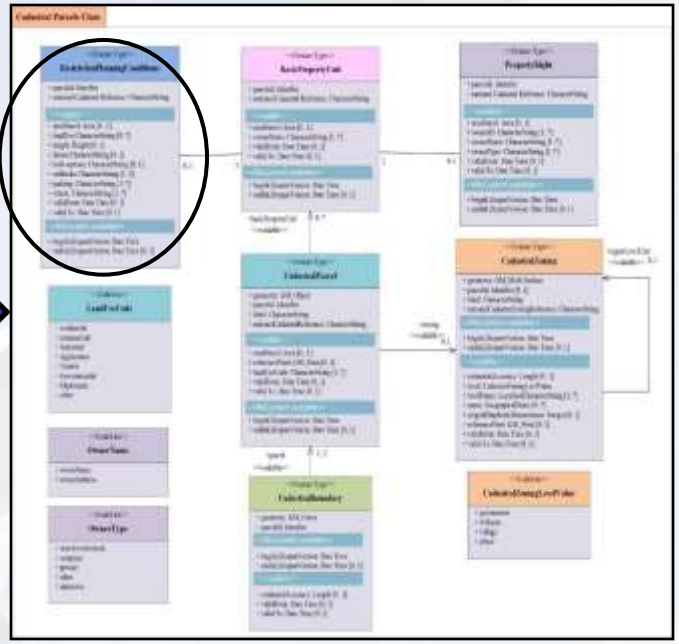
**The research revealed the following:**

- **absence of seamless cadastral parcels data available at the national level in Oman.**
- **The available features of cadastral parcels are exclusively represented by points and lines and not structured according to specific GIS data model.**

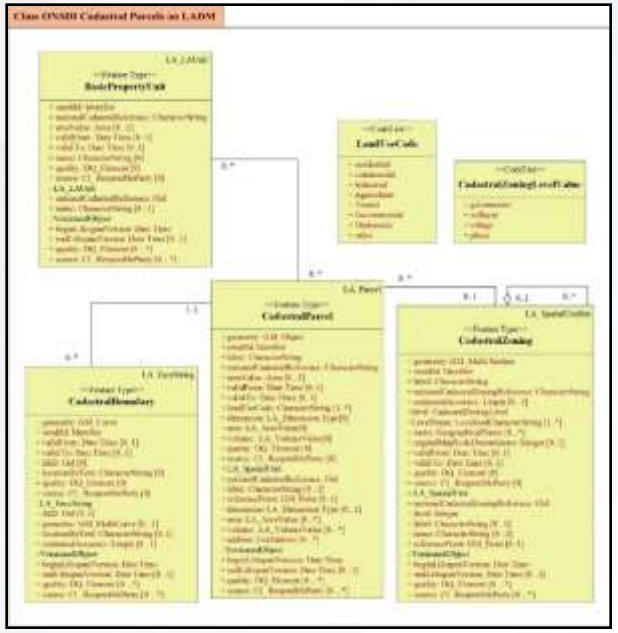
# New 2D Cadastral Parcels Model:



First model



Revised model



ONSDI model on LADM

# Conclusions

- To utilize the new 2D cadastral parcels model, the Ministry of Housing and National Centre for Statistics & Information (NCSI) can discuss the possibility of using the model to generate a Digital Cadastral Database (DCDB) with the National Survey Authority (NSA).

**Thank you for your attention**

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